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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/932,610	08/17/2001	Walter L. Winterbottom	9105-80	5085

7590 03/13/2002

Woodard, Emhardt, Naughton, Moriarty and McNett
Bank One Center/Tower
Suite 3700
111 Monument Circle
Indianapolis, IN 46204-5137

EXAMINER

TRAN, LEN

ART UNIT	PAPER NUMBER
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1725

DATE MAILED: 03/13/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/932,610

Applicant(s)

WINTERBOTTOM ET AL.

Examiner

Len Tran

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 12 February 2002.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-26 and 50-57 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-26 and 50-57 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 6.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other:

DETAILED ACTION

Election/Restrictions

1. Applicant's election of group I, claims 1-26 and 50-57 in Paper No. 5 is acknowledged. Because applicant did not distinctly and specifically point out the supposed errors in the restriction requirement, the election has been treated as an election without traverse (MPEP § 818.03(a)).

Claim Objections

2. Claim 20 is objected to because of the following informalities: Claim 20 should be dependent to 19 based on the claimed language, not depending to itself. Appropriate correction is required.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. Claims 1-8, 10, 11, 14, 16, 17-26, 50-52 insofar as definite are rejected under 35 U.S.C. 102(b) as being anticipated by Shibata et al (US 5,979,534).

Shibata et al disclose the method of producing a semi solid material without stirring, comprising the steps of: heating the metal alloy, transferring the metallic melt by regulating the

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transfer into the vessel, crystallizing the melt in the vessel by cooling to form rounded solid particles, feeding the semi solid material from the vessel to the mold and forming a shape article (figures, col. 3, lines 53-67 through col. 4, lines 1-13, col. 10, lines 1-12). The controlled rate of cooling of the metallic melt is about 0.01 degrees C/s to about 5 C/s (col. 7, lines 1-8). The controlled rate of cooling is at least partially controlled by adding heat to the vessel. The transfer temperature is between the coherency temperature of the metal and about 3, 15, and 25 degrees Celsius above the liquidus temperature of the metal alloy (col. 6, lines 57-61). Regulating the transfer amount of the metallic melt into the vessel. Controlling the differential between the temperature of the metallic melt during the heating and the temperature of the metallic melt during the transferring. The rounded particles are partially dendritic and wherein the round particle has a diameter of between 40 and 50 micron (col. 7, lines 10-25).

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later

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invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

7. Claims 9, 12, 13, 15, and 55-57 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shibata et al ('534).

As to claim 9, Shibata et al fail to disclose the method of the selected vessel temperature is between 606 to about 610 degrees Celsius. However, Shibata et al disclose the vessel at 580 degrees C for the purpose of forming a spherical structure (col. 6, lines 65-67 through col. 7, lines 1-5).

Therefore, it would have been obvious to one of ordinary skill in the art at the time applicant's invention was made to provide vessel temperature of 606 to 610 Celsius, since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or working ranges involves only routine skill in the art. In re Aller, 105 USPQ 233.

As to claim 12 and 13, Shibata et al fail to disclose transfer rate of between 0.01 pounds per second and about to 1 pounds per second. However, Shibata et al mention of transferring the melted material into the vessel. The transfer rate should be as fast as possible, since the melted material should not be exposed outside the transfer element and the vessel too long in order to maintained the dendritic structure.

Therefore, it would have been obvious to one of ordinary skill in the art at the time applicant's invention was made to provide transfer rate of 0.01 to 1 lbs/s, since it has been held

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that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or working ranges involves only routine skill in the art. In re Aller, 105 USPQ 233.

As to claim 15, Shibata et al fails to disclose the amount of transfer to be between 0.5 to 10 pounds. However, the amount would depend on the final product, whether the mold cavity can hold such quantity of metal for the specified shape.

Therefore, it would have been obvious to one of ordinary skill in the art at the time applicant's invention was made to have between 0.5 to 10 pounds of melted material, since this amount would depend on the final product's requirement.

As to claims 55-57, Shibata et al fails to disclose the total cycle time for transferring, nucleating, and crystallizing is less than 60 second. However, Shibata et al mention of transferring the melted material into the vessel. The transfer cycle should be as fast as possible, since the melted material should not be exposed outside the transfer element and the vessel too long in order to maintained the dendritic structure.

Therefore, it would have been obvious to one of ordinary skill in the art at the time applicant's invention was made to provide transfer cycle of less than 60 seconds, since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or working ranges involves only routine skill in the art. In re Aller, 105 USPQ 233.

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8. Claims 53 and 54 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shibata et al ('534) as applied to claim 50 above in paragraph 3, and further in view of Sugawara et al (US 5,803,154).

Shibata et al disclose the claimed invention as claimed above, but fail to teach a displacement of the ram to be about 1 inch/s to 50 inch/s.

However, Sugawara et al disclose the method of injecting the cast plunger at the speed of 0.5 m/s for the purpose of satisfactory filling the cavity.

Therefore, it would have been obvious to one of ordinary skill in the art at the time applicant's invention was made to provide injection speed of 1 inch/s to 50 inch/s as taught by Sugawara et al, in Shibata et al in order to satisfactory filling the mold cavity.

Citation of Relevant Art

9. US 6,311,759 is cited to show state of the art.

Inquiry

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Len Tran whose telephone number is (703)605-1175. The examiner can normally be reached on M-F, 8:30 - 5.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Tom Dunn can be reached on 703-308-3318. The fax phone numbers for the

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organization where this application or proceeding is assigned are (703)305-3602 for regular communications and (703)305-3602 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703)308-0661.

Len Tran
Examiner
Art Unit 1725

LT
March 6, 2002



**M. ALEXANDRA ELVE
PRIMARY EXAMINER**